

CLAIMS

What is claimed is:

1. A method for generating a continuous stream of liquid metal droplets for selective application to locations on a substrate comprising:
producing a continuous stream of liquid solder metal droplets; and
selectively directing said stream of liquid solder metal droplets in a first dimension and a second dimension, said selectively directing to said locations on said substrate comprising:
raster scanning said stream of liquid solder metal droplets, said raster scanning including electrically charging said liquid solder metal droplets; and
deflecting said electrically charged liquid solder metal droplets in said first dimension and said second dimension to said locations on said substrate; and
blanking selectively said stream of liquid solder metal droplets to prevent a portion of said stream of liquid solder metal droplets from contacting said substrate.
2. The method according to claim 1, wherein said producing step further comprises:
heating a metal to a liquid state;
controlling a temperature of said solder metal in said liquid state to maintain said solder metal in said liquid state.
3. The method according to claim 1, wherein said producing step further comprises:
inducing a pressure on a source of liquid metal; and
vibrating said liquid metal to cause said liquid solder metal droplets to be formed as said pressure is induced on said source of liquid solder metal.
4. The method according to claim 3, wherein said pressure inducing step is generated by a piezoelectric crystal driven by a given frequency to produce a desired pressure.

5. The method according to claim 3, wherein said vibrating step is generated by a piezoelectric crystal driven by a selected frequency to produce a given vibration frequency sufficient enough to form droplets having a diameter substantially in the range of about 40 microns to about 300 microns.

6. The method according to claim 1, wherein said producing step further comprises forming said liquid solder metal droplets having a substantially consistent diameter in the range of about 40 microns to about 300 microns.

7. The method according to claim 1, wherein said blanking step comprises blanking when said stream of liquid metal droplets is positioned between an endpoint of a first line and a start point of a second line.

8. The method according to claim 1, wherein said blanking step further comprises: deflecting said stream of liquid solder metal droplets; and catching said deflected stream of liquid solder metal droplets prior to being deposited on said substrate.

9. The method according to claim 1, wherein said directing step comprises programmably controlling a direction of said stream of liquid solder metal droplets.